

| REVISIONS |   |          |                              |
|-----------|---|----------|------------------------------|
| LTR       | DESCRIPTION                             | DATE     | APPROVAL                     |
| J         | See Rev PGE3C<br>SH 1, 5<br>SH 12 Added | 92-10-09 | C.D.H.<br><i>[Signature]</i> |

SEE SHEET 12 FOR REVISION HISTORY

Unless otherwise specified  
dimensions are in inches  
DO NOT SCALE

Tolerances  
Decimals

2 places  
+ .02

3 places  
+ .005

## Angles

 $\pm$ 

SELECTED ITEM DRAWING

DRAWING TO BE CHANGED ONLY

BY APPROVAL OF PARTS ENGINEERING

[illegible]

SHEET REVISION STATUS

CONTRACT

NO. DTFA01-83-C-20027

ORIGINAL

DATE APPD 84/5/17

DRAWN BY

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DESIGN ACTIVITY APPROVAL

WESTINGHOUSE ELECTRIC CORPORATION  
DEFENSE & ELECTRONIC SYSTEMS CENTER  
Baltimore, MD., U.S.A. 21203

FED. SUP. CLASS : 5930

SWITCH (COAXIAL) R.F.  
TRANSMISSION LINE SPDT

SIZE  
A

CAGE CODE  
97942

DWG. NO.

645A630

PROCURING ACTIVITY APPROVAL

SCALE

NONE

WEIGHT

SHEET 1 OF 12

| WESTINGHOUSE<br>PART NUMBER | MANUFACTURER'S PART NUMBER |            |            |                         |         |
|-----------------------------|----------------------------|------------|------------|-------------------------|---------|
|                             | RLC<br>ELECTRONICS         | DOW-KEY    | AMPHENOL   | MICROWAVE<br>ASSOCIATES | K & L   |
| 645A630H01                  | S-4111                     | TO BE ASGN | TO BE ASGN | TO BE ASGN              | MS-3006 |

| APPROVED MANUFACTURERS |                      |
|------------------------|----------------------|
| NAME                   | CAGE CODE<br>(H4/H8) |
| RLC ELECTRONICS        | 12598                |
| DOW-KEY                | 00471                |
| AMPHENOL               | 74868                |
| MICROWAVE ASSOCIATES   | 96341                |
| K & L MICROWAVE        | 50140                |

|                                   |                    |                    |
|-----------------------------------|--------------------|--------------------|
| SIZE<br>A                         | CAGE CODE<br>97942 | DWG NO.<br>645A630 |
| SCALE: NONE .REV. $\beta$ SHEET 2 |                    |                    |

1. SCOPE

This drawing delineates the requirements for a miniature spdt coaxial switch. Requirements which are specified herein but which are not specified or controlled in the manufacturer's published specifications are indicated by an asterisk(\*).

2. APPLICABLE DOCUMENTS

The following documents of the issue in effect on the date of request for quote, form a part of this drawing to the extent specified herein. Documents listed without revision status shall be those in effect on the latest revision date of this document. (see 3.1)

Government and nationally recognized publications

|             |  |
|-------------|--|
| QQ-P-35     | PASSIVATION  |
| QQ-A-200    | ALUMINUM   |
| QQ-S-571    | SOLDER, LEAD TIN ALLOY   |
| DOD-D-1000  | ENGINEERING DRAWINGS   |
| MIL-S-3928  | COAXIAL SWITCHES   |
| MIL-F-14072 | FINISHES FOR GROUND ELECTRONIC EQUIPMENT                       |
| MIL-C-24308 | CONNECTORS   |
| MIL-C-39012 | CONNECTORS   |
| MIL-STD-202 | TEST METHODS   |
| MIL-STD-454 | STANDARDS FOR ELECTRICAL EQUIPMENT                             |
| H4/H8       | COMMERCIAL AND GOVERNMENT ENTITY (CAGE)<br>CATALOGING HANDBOOK |

3. REQUIREMENTS.

- 3.1 Drawing precedence. This drawing takes precedence over documents referred to herein and shall be interpreted in accordance with DOD-D-1000. A later revision of any document listed in section 2 without a specific revision letter may be used if requirements of the later revision are not degraded below those specified in the earlier revision.

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\* 3.2 Electrical.

- 3.2.1 Isolation. The isolation between connected ports and the open port shall be 80 dB (minimum) over a frequency range of DC to 4.0 GHz.
- 3.2.2 Switching time. The switching time shall not exceed 20 milliseconds.
- 3.2.3 Nominal Impedance. The part shall have a nominal impedance of 50 ohms.
- 3.2.4 Power Handling Capability. The part shall handle without adverse effects 25 watts average.
- 3.2.5 Insertion loss. The part shall have a maximum insertion loss of 0.2 dB over a frequency range of 2.5 GHz to 3.1 GHz.
- 3.2.6 Voltage Standing Wave Ratio. The part shall have a maximum voltage standing wave ratio of 1.2:1 over a frequency range of 2.5 GHz to 3.1 GHz.
- 3.2.7 Operating Conditions. The part (at 25C) shall operate at 15 VDC/350 mA maximum.
- 3.2.8 Life. The part shall operate without adverse effects for a minimum duration of 1,000,000 cycles.
- 3.2.9 Operating Mode. The part is designed for failsafe operation.
- 3.2.10 Switching Sequence. The switching sequence for the part shall be break before make.
- 3.2.11 Operating Curves. The part shall operate in accordance with the curves (VSWR vs. Frequency, Insertion Loss vs. Frequency, Isolation Loss vs. Frequency) illustrated in figure 3 of this drawing from DC to 4 GHz.
- 3.2.12 Solid State Control. The switch shall be compatible with the EIA RS-422 differential balanced interface. The switch shall be equipped with a balanced TTL line receiver compatible with a balanced line driver similar to the AM-26LS31. An integral terminating resistor of 150 W must be included in the switch. See Figure 2A.

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- 3.2.13 Power/Logic Connector. A nine pin miniature male D connector shall be used for power supply and logic inputs. Pin out shall be as follows:

| <u>Pin No.</u> | <u>Function</u>          |
|----------------|--------------------------|
| 1              | +15 Vdc Power            |
| 6              | Ground                   |
| 7              | Positive (+) logic input |
| 8              | Negative (-) logic input |

- 3.2.14 Switch Control. Logic control of switching shall be as follows:

| <u>PIN 7</u> | <u>PIN 8</u> | <u>RF CONN.</u> |
|--------------|--------------|-----------------|
| L            | H            | J1-J2           |
| H            | L            | J3-J2           |

- 3.2.15 Pick-up Voltage. The maximum pick-up voltage shall be 10 volts dc.

- 3.2.16 Drop-out Voltage. The maximum drop-out voltage shall be 5 volts dc.

### 3.3 Mechanical.

- 3.3.1 RF Connectors. Female SMA Coaxial Connectors shall meet the mating requirements of MIL-C-39012 without damage.

- 3.3.2 Multipin Connectors. The multipin power/logic connector shall be in accordance with M24308/3-1. Lock posts for the connector shall be included. This connector is a miniature "D", 9 pin male connector. The lockposts shall be capable of withstanding a ten inch-pound torque without rotating or loosening.

#### ★ 3.3.3 Soldering.

- Internal solder connections shall incorporate the use of high temperature solder in accordance with QQ-S-571, Sg5.
- Soldering practices shall be in accordance with MIL-STD-454, requirement 5.

- 3.3.4 Configuration. The part shall meet the dimensional requirements as illustrated in figure 1 of this drawing.

- 3.3.5 Schematics. The internal circuitry of this part shall be as described in the schematic diagram of figure 2.

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- 3.4 Material.
- \* 3.4.1 Body. The body shall be aluminum in accordance with QQ-A-200.
- 3.4.2 SMA Connector. The SMA connector shall be constructed of corrosion resisting steel.
- 3.5 Finish.
- 3.5.1 Cover and Body. The finish of the cover shall be in accordance with MIL-F-14072.
- 3.5.2 SMA Connector. The SMA connector shall be passivated in accordance with QQ-P-35.
- 3.6 Environmental.
- 3.6.1 Operating Temperature. The part shall meet the requirements of 3.2 while in an ambient temperature range of -10C to +70C.
- 3.6.2 Storage Temperature. After being exposed to the temperature range of -55C to +125C, the part shall meet the requirements of 3.2.
- 3.6.3 Altitude. The part shall be in accordance with 3.2 while operating under conditions specified in paragraph 4.2.1 of this drawing.
- 3.6.4 Humidity. The part shall be in accordance with 3.2 while operating under conditions specified in paragraph 4.2.2 of this drawing.
- 3.6.5 Vibration. When tested in accordance with paragraph 4.2.4, the parts shall meet the requirements of this drawing.
- \* 3.7 Identification and marking. The parts shall be marked with the following information:
- 3.7.1 Part Identification.
- Westinghouse H4/H8 CAGE Code followed by a dash (-) and the Westinghouse part number.  
Example: 97942-645A630H01.
  - The actual manufacturer's name, registered trademark or H4/H8 CAGE Code.
  - Date code. On parts which are returned by the manufacturer after rework or reinspection, the manufacturer shall mark a new date code prefixed by the letter "R" without removal of any prior marking.
  - Serial number.

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|-----------|--------------------|--------------------|
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| SCALE:    | NONE               | .REV. 6 SHEET 6    |

3.7.2 Additional marking. The RF ports shall be identified as shown on the outline drawing.

3.8 Marking Permanence. All marking shall be clear and legible before, during and after unit is subjected to test as specified in paragraph 4.2.3.

\* 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection.

4.1.1 Manufacturer. The manufacturer is responsible for controlling the quality of his product and offering to Westinghouse only those items that conform to all the requirements specified herein.

4.1.2 Westinghouse. Westinghouse reserves the right to perform any test it deems necessary to assure that parts conform to all the specified requirements.

4.2 Test Methods.

4.2.1 Altitude. The part shall be tested in accordance with the requirements of MIL-S-3928 for altitude testing.

4.2.2 Humidity. The part shall be tested in accordance with the requirements of MIL-S-3928 for humidity testing.

4.2.3 Marking permanence. Parts shall be tested in accordance with MIL-STD-202, Method 215.

4.2.4 Vibration. Testing shall be in accordance with MIL-S-3928, Method I.

4.3 Quality Conformance Inspection. Quality Conformance inspection shall be performed in accordance with MIL-S-3928.

5. PREPARATION FOR DELIVERY

5.1 Preservation, packaging and packing. Preservation, packaging and packing shall be in accordance with MIL-P-23971, level C.

5.2 Identification and marking

5.2.1 Unit package. The unit package shall be marked with the following information:

- a. Westinghouse H4/H8 CAGE Code (97942) followed by a dash and the Westinghouse part number. Example: 97942-645A630H01
- b. The actual manufacturer's name, registered trademark or H4/H8 CAGE Code.

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| SCALE:    | NONE               | .REV. 6 SHEET 7    |

5.2.2 Shipping container. The shipping container shall be marked with the following information:

- a. Westinghouse part number
- b. Manufacturer's name or registered trademark.
- c. Purchase order number.
- d. Month and year of preservation and packing.

6 NOTES (WESTINGHOUSE INTERNAL)

6.1 Approved sources. Identification of approved source(s) herein is not to be construed as a guarantee of present or continued availability as a source of supply for the item(s) described on this drawing.

|           |                    |                    |
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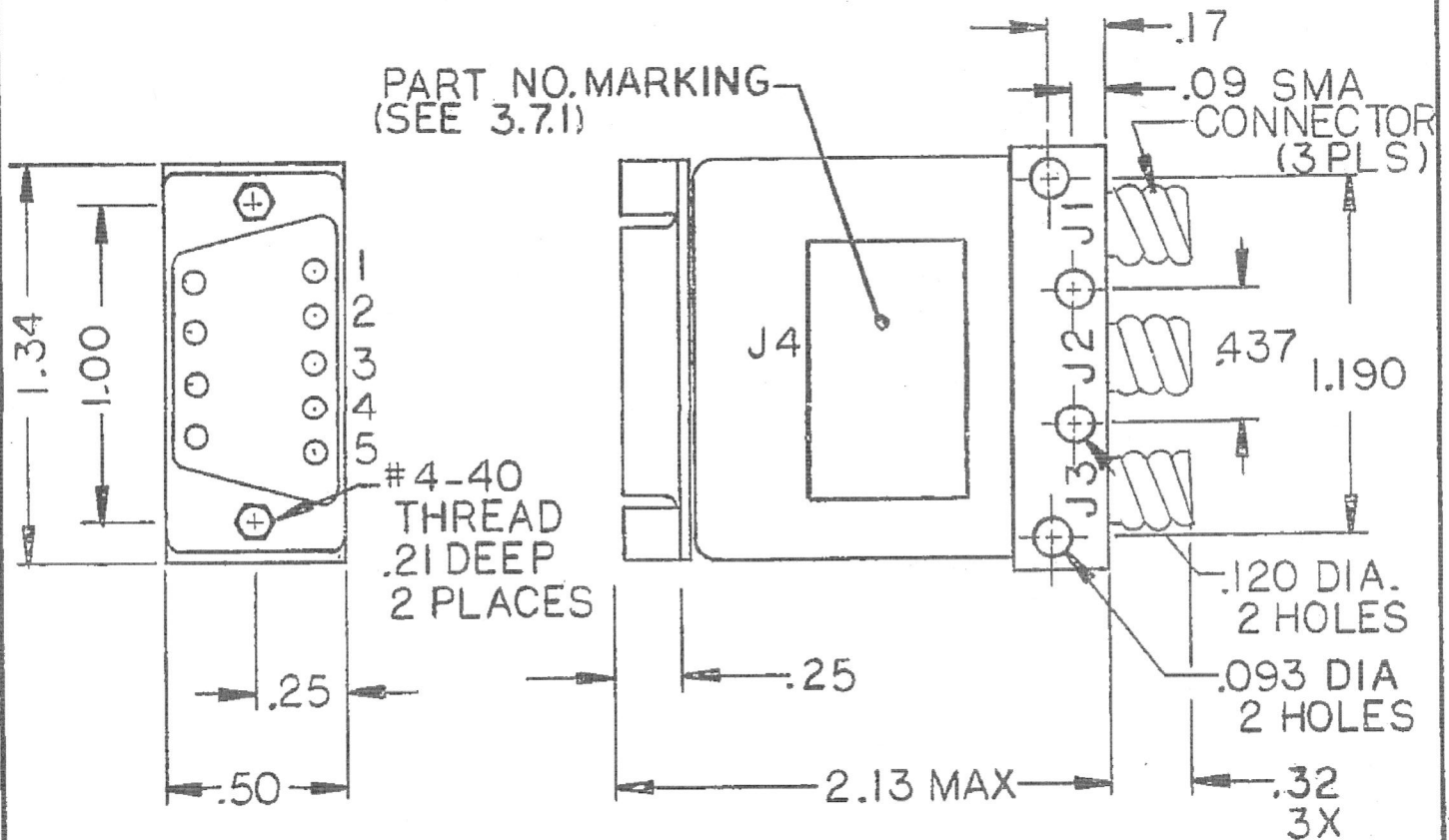


FIGURE 1-OUTLINE DRAWING

15 VDC CONTINUOUS

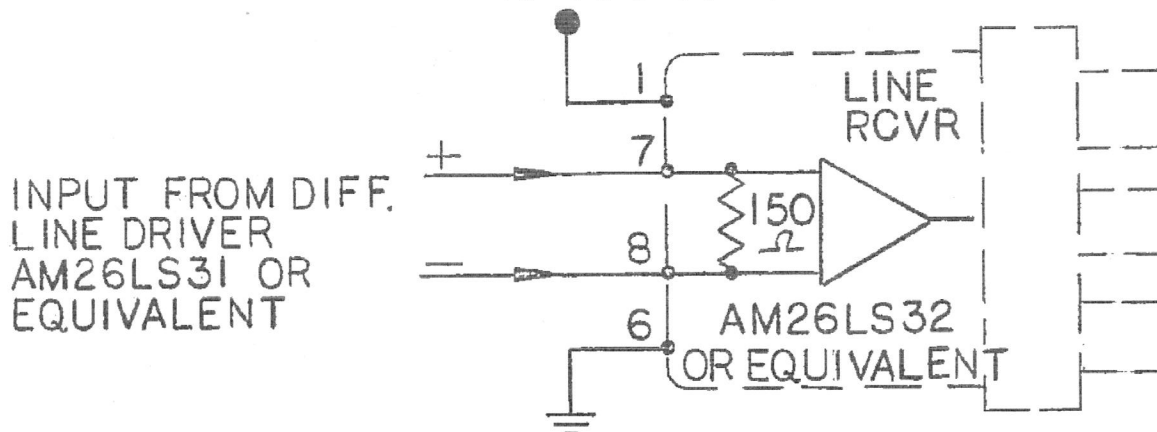


FIGURE 2A

| SIZE       | CODE IDENT NO. | DWG NO. |
|------------|----------------|---------|
| A          | 97942          | 645A630 |
| SCALE NONE | REV H          | SHEET 9 |

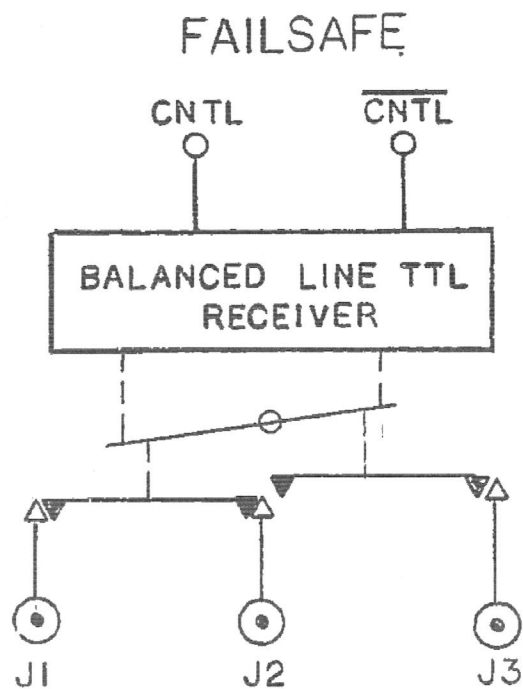


FIGURE 2B-SCHEMATIC

| SIZE       | FSCM NO. | DWG NO.  |
|------------|----------|----------|
| A          | 97942    | 645A630  |
| SCALE NONE | REV B    | SHEET 10 |

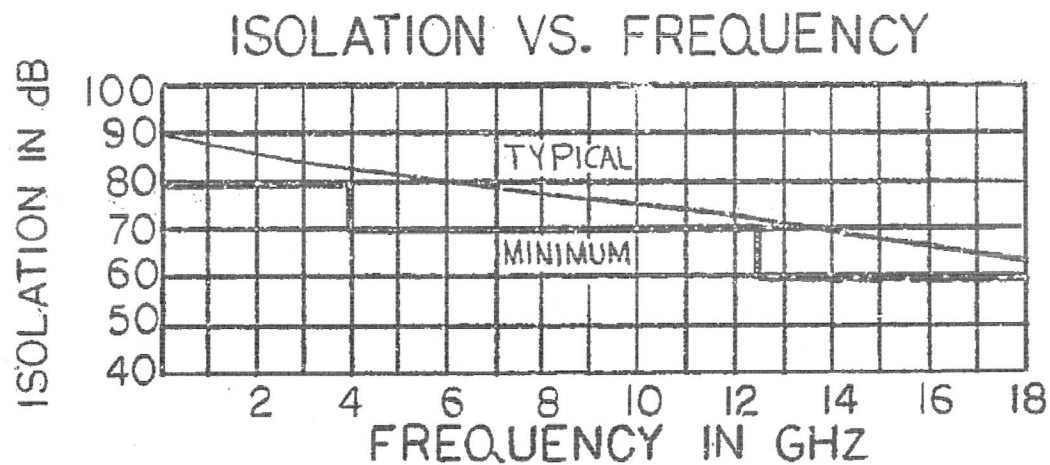
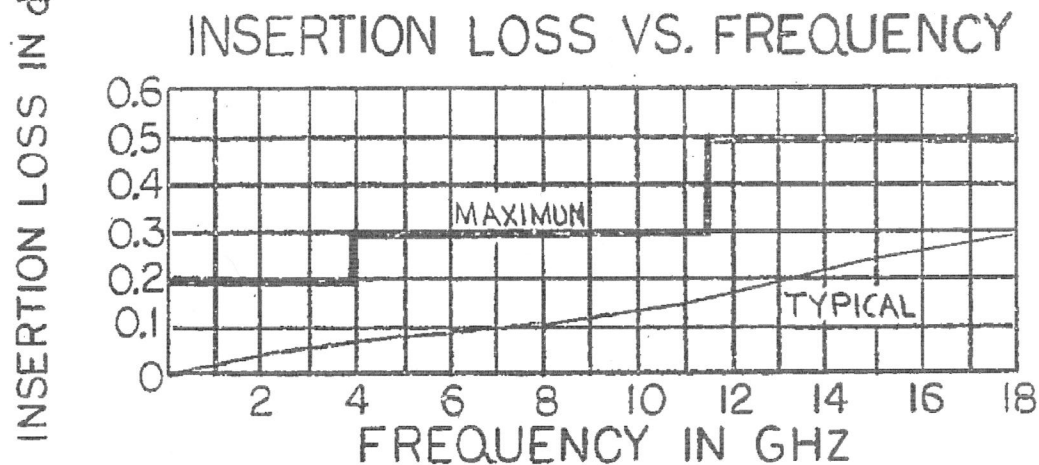
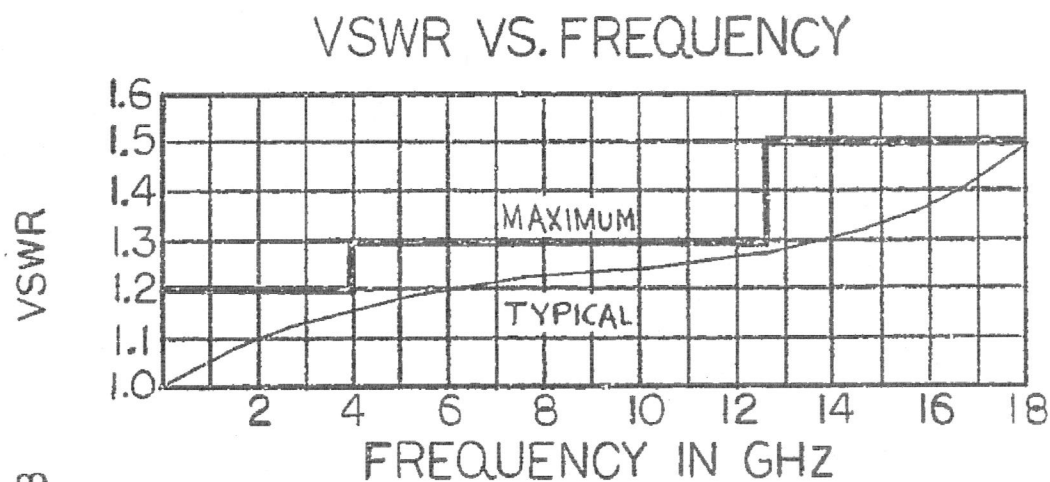


FIGURE 3 - TYPICAL OPERATING CURVES

|            |          |          |
|------------|----------|----------|
| SIZE       | FSCM NO. | DWG NO.  |
| A          | 97942    | 645A630  |
| SCALE NONE | REV B    | SHEET 11 |

| REVISIONS |  |          |                  |
|-----------|--|----------|------------------|
| LTR       | DESCRIPTION  | DATE     | APPROVAL         |
| H         | See Rev PBG6C<br>Replaces Rev G with change<br>SH 1, 9 | 91-02-12 | CDH<br>S. Carter |

|             |                    |                    |
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